NON-PUBLIC?: N
ACCESSION #: 9402160245
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Vogtle Electric Generating Plant-Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000425

TITLE: TURBINE/REACTOR TRIP DUE TO WATER ENTERING MOISTURE SEPARATOR REHEATERS
EVENT DATE: 01/19/94 LER #: 94-002-00 REPORT DATE: 02/11/94

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Mehdi Sheibani, TELEPHONE: (706) 826-3209
Nuclear Safety and Compliance

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On January 19, 1994, at 0938 EST, control room personnel received an alarm for a trip of the "B" heater drain tank (HDT) pump. Personnel immediately initiated a power reduction and started a third condensate pump to make up for the loss of feedwater from the HDT. However, at 0940 EST, with reactor power at 98.5 percent power, a turbine/reactor trip occurred due to high water levels in the "C" and "D" moisture separator reheaters (MSRs).

The initiating cause of this event was the loss of the "B" HDT pump, likely caused by the spurious actuation of a low level sensor. The "B" HDT high level dump valve was out of service for maintenance, and when the HDT high level switch actuated, the normal drain valves for the "C" and "D" moisture separator drain tanks (MSDTs) closed, as designed. Malfunctions of the MSDTs level controllers and switches allowed overflow

from the MSDTs to enter into the "C" and "D" MSRs where level switches initiated a turbine trip.

A steam leak on the upper tap of the HDT low level sensor was repaired. The "B" HDT high level dump valve was returned to service. The MSDT level controllers were recalibrated and level switches and sensing lines were cleaned and tested to verify correct operation.

END OF ABSTRACT

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(iv) because an unplanned actuation of the reactor protection system (RPS) occurred.

B. UNIT STATUS AT TIME OF EVENT

At the time of this event, Unit 2 was operating in Mode 1 (power operation) at 100 percent of rated thermal power. Other than that described herein, there was no inoperable equipment that contributed to the occurrence of this event.

C. DESCRIPTION OF EVENT

On January 19, 1994, at 0938 EST, control room personnel received an alarm for a trip of the "B" heater drain tank (HDT) pump and immediately initiated a power reduction. Because the "B" HDT high level dump valve was already out of service for maintenance, the HDT filled with steam generator (SG) blowdown heat exchanger cooling water, along with water from the 4B heater and the "C" and "D" moisture separator reheaters' (MSRs) normal drains. When the HDT high level switch actuated, the normal drain valves for the "C" and "D" moisture separator drain tanks (MSDTs) closed, as designed. The level in the MSDTs increased due to inflow from the "C" and "D" MSRs. Normally, when high level is reached in the MSDTs, the level controllers should open the MSDT high level dump valves. However, the level controllers were out of calibration and prevented this from happening. As MSDT levels increased further, high level switches also failed to actuate the MSDT dump valves due to an accumulation of iron oxide in the float chambers and sensing fines. This led to an overflow of the MSDTs into the "C" and "D" MSRs where level switches initiated a timer. Ten (10) seconds later, at 0940 EST, the timer generated a turbine trip signal. This resulted in a turbine/reactor trip with reactor power at 98.5 percent. The main feedwater system isolated, auxiliary feedwater (AFW) actuated, as

designed, and control room personnel responded appropriately to maintain steam generator water levels. The turbine driven AFW pump was secured at 0955 EST, and normal plant operations resumed in Mode 3 (hot standby).

D. CAUSE OF EVENT

The causes of this event were the trip of the "B" HDT pump in conjunction with the inoperability of the HDT high level dump valve and malfunctions of the moisture separator drain tanks' level controllers and level switches.

The initiating cause of this event was the tripping of the "B" HDT pump. The "B" HDT high level dump valve was already out of service for maintenance, causing the HDT to fill with SG blowdown heat exchanger cooling water, along with water from the 4B heater and the "C" and "D" MSRs' normal drains. When the HDT high level switch actuated, the normal drain valves for the "C" and "D" moisture separator drain tanks closed, as designed. The level in the MSDTs increased due to inflow from the "C" and "D" moisture separator reheaters. Normally, when high level is reached in the MSDTs, the level controllers would open the MSDT high level dump valves. However, the level controllers were out of calibration and prevented this from happening. As MSDT levels increased further, high level switches also failed to actuate the MSDT dump valves due to an accumulation of iron oxide in the float chambers and sensing fines. This led to an overflow of the MSDTs into the "C" and "D" MSRs where level switches initiated a turbine trip.

Troubleshooting into the cause of the HDT pump trip provided inconclusive results. However, a likely cause of the pump trip was a spurious HDT low level sensor actuation due to a steam leak which was found on the upper tap for this sensor. Monitoring of the system as the unit returned to power found no other abnormal condition that would account for the HDT pump trip.

E. ANALYSIS OF EVENT

The main turbine protection system responded as designed to trip the turbine. The reactor protection system actuated as designed and control room personnel responded appropriately to the event. Auxiliary feedwater actuated to supply the SGs when the main feedwater system isolated. Based on these considerations, there was no adverse effect on plant safety or on the health and safety of the public as a result of this event.

F. CORRECTIVE ACTIONS

1) The MSDT level controllers were recalibrated and level switches and sensing lines were cleaned and tested to verify correct operation. The "B" HDT high level dump valve was returned to service.

2) An evaluation of the periodic maintenance practices for secondary feedwater heater drain valves will be completed by March 1, 1994.

3) Level controllers and switches for feedwater heaters and drain tanks are being inspected to ensure they are operating normally. Unit 1 inspections were completed following a unit shutdown on February 2, 1994. Unit 2 inspections are being conducted when practical to avoid interfering with unit operations and will be completed no later than the end of the next Unit 2 cold shutdown.

4) The steam leak on the "B" HDT level sensor tap was repaired.

G. ADDITIONAL INFORMATION

1) Failed Components:
None

2) Previous Similar Events:
None

3) Energy Industry Identification System Code:
Condensate and Feedwater System - SD
Feedwater Heater Drain System - SN
Auxiliary Feedwater System - BA
Main Steam System - SB
Main Turbine System - TA
Reactor Protection System - AA

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Georgia Power
the southern electric system

February 11, 1994

LCV-0293

Docket Nos. 50-425

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
LICENSEE EVENT REPORT
TURBINE/REACTOR TRIP DUE TO WATER ENTERING
MOISTURE SEPARATOR REHEATERS

In accordance with the requirements of 10 CFR 50.73, Georgia Power Company submits the enclosed report related to an event which occurred on January 19, 1994.

Sincerely,

C. K. McCoy

CKM/HWM

Enclosure: LER 50-425/1994-002

xc: Georgia Power Company
Mr. J. B. Beasley, Jr.
Mr. M. Sheibani
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